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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/053,699	01/21/2002	Robert J. Smith	1604-382	7832

22442 7590 09/20/2005

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EXAMINER

BELLO, AGUSTIN

ART UNIT PAPER NUMBER

2633

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/053,699

Applicant(s)

SMITH, ROBERT J.

Examiner

Agustin Bello

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8-11, 13-18, 21-24, 26-31, 33-40 and 42-49 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-11, 13-18, 21-24, 26-31, 33-40, and 42-49 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4/11/05, 3/21/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6, 8-11, 13-18, 21-24, 26-31, 33-40, and 42-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thierman (U.S. Patent No. 5,303,024) in view of Hill (U.S. Patent No. 5,150,171).

Regarding claims 1, 11, 17, 23, 24, 30, and 36, Thierman teaches a method for transmitting optical signals through free space, comprising: providing a transmit aperture (reference numeral 3 in Figure 1), emitting a broad, divergent beam from a transmit aperture (as seen in Figure 1), wherein the beam has a diameter at the transmit aperture that is less than an inner scale near the transmit aperture (column 2 lines 64-68). Thierman differs from the claimed invention in that Thierman fails to specifically teach that the divergent light beam comprises a plurality of optical wavelengths, each optical wavelength comprising a modulated communication. However, the use of modulated multiple wavelengths in optical communications is well known in the art. Furthermore, Thierman discloses that the light source of the invention can be modulated (column 3 lines 8-11) and can be of any type (column 3 lines 19-20). Moreover, Hill in the same field of optical signal transmission, teaches the use of a broadband (e.g. multiple wavelength) divergent modulated light beam (reference numeral 22 in Figure 2). One skilled in the art would have been motivated to modulate a plurality of optical

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wavelengths in order to facilitate communication of a high amount of data and to be able to later separate the signal from background radiation (column 3 lines 23-27 of Thierman). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate a modulated multiple wavelength beam source as taught by Hill in the device of Thierman.

Regarding claims 2, 14, and 27, Thierman teaches that the air current is at or near the transmit aperture (e.g. "atmosphere" in Figure 1) and wherein the beam diameter is about 1 to 10mm (column 4 lines 32-40).

Regarding claims 3, 15, 26, 28, and 38, Thierman differs from the claimed invention in that Thierman fails to specifically teach that the beam has an angle of divergence of from about 50 to about 2000 microradians. However, one skilled in the art would clearly have recognized the ability to control the angle of divergence of the beam according to the aperture size. Selecting the angle of divergence for a beam in an optical system is very well known in the art and would have been an obvious step to one skilled in the art at the time the invention was made.

Regarding claims 4, 8, 16, 29, 33, and 42, Thierman differs from the claimed invention in that Thierman fails to specifically teach that the optical receiver subtends at least 20 or 50 microradians of the beam. However, one skilled in the art would clearly have recognized the ability to determine the amount of radiation the receiver subtends. Determining and setting the amount of radiation received by the receiver in an optical system is very well known in the art and would have been an obvious step to one skilled in the art at the time the invention was made.

Regarding claim 5, Thierman teaches that the beam has a diameter that is less than an inner scale of the air turbulence (e.g. at the aperture; column 2 lines 64-68).

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Regarding claims 6, 18, 31, 39, and 40, Thierman differs from the claimed invention in that Thierman fails to specifically teach the beam has a diameter that is from about 5 to about 20% of a distance to a heat emitting surface adjacent to the transmit aperture or ranges from about 1 mm to about 10 mm. However, one skilled in the art would clearly have recognized the ability to select the beam diameter in the system of Thierman by change in the aperture diameter. Furthermore, setting of a beam diameter in an optical system is very well known in the art and would have been an obvious step to one skilled in the art at the time the invention was made.

Regarding claims 9, 21, and 34, Thierman teaches receiving the beam at a receiver (reference numeral 9,10 in Figure 1); and focusing a plurality of optical wavelengths at a corresponding plurality of spatially discrete locations (reference numeral 9,10 in Figure 1), a respective optical detector being positioned at or near each location.

Regarding claim 10, 22, and 35, Thierman teaches passing a first optical wavelength through a first immersion lens (reference numeral 7 in Figure 1) to form farther focused first radiation; and receiving the further focused first radiation with a first optical detector (reference numeral 10 in Figure 1).

Regarding claim 13 and 37, Thierman teaches that the transmit aperture outputs a collimated beam of radiation (inherent as seen in Figure 1).

Regarding claim 43-49, Thierman teaches that the distance between the transmitter and the receiver is a long distance (e.g. 100m, column 4 lines 32-40).

### ***Response to Arguments***

3. Applicant's arguments with respect to claim 3/28/05 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (571) 272-3026. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AB



**AGUSTIN BELLO**  
**PATENT EXAMINER**